Wind
First Class

Wind Velocity Transmitter

Wind Transmitter "First Class" Advanced

- Low Power Instrument
- Digital output

The wind transmitter is designed for the acquisition of the horizontal component of the wind velocity in the field of meteorology and environmental measuring technology, evaluation of location, and measurement of capacity characteristics of wind power systems. In the plain country the wind transmitter meets all requirements of IEC 61400-12-1 for an Instrument of the accuracy class 0.5.

Special characters are a defined and optimised, dynamic behaviour also at high turbulence intensity, minimal over-speeding, and a low starting value.

The measuring value is available at the output as digital signal. It can be transmitted to display instruments, recording instruments, data loggers as well as to process control systems.

For winter operation the instrument (4-3351.00.000) is equipped with an electronically regulated heating, which guarantees a smooth running of the ball bearings, and prevents the shaft and slot from icing-up.

Order No.		Technical Data	
4.3351.00.000		With heating	
.10.		W/o heating	
		Measuring range	0.3 ... 75 m/s
		Accuracy	
		0.3 ... 50 m/s	‹ 2% of meas. value or ‹ 0.2 m/s
		Linearity	r › 0.999 95 (4 ... 20 m/s)
		Inclined flow	
		- mean deviation from the cosinus line	‹ 0.1% (in the range ±20°)
		- Turbulence effect	‹ 1% (in the range up to 30% turbulence intensity)
		Electr. output	1080 Hz @ 50 m/s
		Delay distance	‹ 3 m
		Survival speed	80 m/s (max. 30 minutes)
		Operating voltage	3.3 ... 42 V DC
		Electronics	0.3 mA with 3.3 V ‹ 0,5 mA with 5 V
		Heating	24 V AC/DC; 25 W
		Ambient temp.	-50 ... +80 °C
		Electr. connection	8-pole plug connection
		Mounting	onto mast tube R 1"
		Fixing boring	Ø 35 x 25 mm
		Dimensions	290 x 240 mm
		Protection	IP 55
		Weight	0.5 kg
		Material	
		Housing	alu, anodised
		Cup star	carbon-fibre-reinforced plastic

Wind Transmitter "First Class" Advanced

- Analog output and
- Digital output

The wind transmitter is designed for the acquisition of the horizontal component of the wind speed in the field of meteorology and environmental measuring technology, evaluation of location, and measurement of capacity characteristics of wind power systems. In the plain country the wind transmitter meets all requirements of IEC 61400-12-1 for an accuracy class 0.5 instrument.

Order No.		Technical Data	
4.3351.00.xxx		With heating	
.10.xxx		W/o heating	
	.x0.140	Electr. output	
		Analogue	0-20 mA (0.3-75 m/s)
		Digital	1000 Hz at 50 m/s
		Sink output	1 max 250 mA
		Source output	1 max 100 mA
	.x0.141	Electr. output	
		Analogue	4-20 mA (0.3-75 m/s)
		Digital	1000 Hz at 50 m/s
		Sink output	1 max 250 mA
		Source output	1 max 100 mA
	.x0.161	Electr. output	
		Analogue	0-10 VDC (0.3-75 m/s)
		Digital	1000 Hz @ 50 m/s
		Sink output	1 max 250 mA
		Source output	1 max 100 mA

Model Brief Description	Order No.	Technical Data

Continuation of page 12

Special characters are a defined and optimised, dynamic behaviour also at high turbulence intensity, minimal over-speeding, and a low starting value.

The measuring value is available at the output as **analogue signal** and as rectangular digital signal.

For winter operation the instrument (4.3351.00.xxx) is equipped with an electronically regulated heating, which guarantees a smooth running of the ball bearings, and prevents the shaft and slot from icing-up.

General

Measuring range	0.3-75 m/s
Accuracy	
0.3-50 m/s	‹ 2% of meas. range Or ‹ 0.2 m/s
Linearity	› 0.99995 (4-20 m/s)
Survival speed	85 m/s (min. 30 minutes)
Distance constant	‹ 3 m
Operating voltage	
Electronics	15-24 V DC
Heating	24 V AC/DC; 25 W
Ambient temperature	-50 ... +80 °C
Electr. connection	8-pole plug connection
Mounting	Onto mast tube R 1"
Fixing boring	Ø 35 x 25 mm
Weight	0.5 kg
Material	
Housing	Alu, anodised
Cup star	carbon-fibre-reinforced plastic

Wind Direction Transmitter

Wind Direction Transmitter "First Class"

- Low Power Instrument
  With digital output
  (Thies serial-synchronous)

The wind transmitter is designed for the acquisition of the horizontal component of the wind direction in the field of meteorology and environmental measuring technology, evaluation of location, and measurement of capacity characteristics of wind power systems.
Special characters are a defined and optimised, dynamic behaviour as well as:

- High measurement accuracy and resolution
- High damping with small distance constant
- Low starting value
- Low power consumption
- Simple mounting

The measuring value is available at the output as **digital signal**. The output signal can be transmitted to display instruments, recording instruments, data loggers as well as to process control systems.

For winter operation the instrument (4.3150.00.xxx) is equipped with an electronically regulated heating.

Order No.		Technical Data	
4.3150.00.00x		With heating	
.10.00x		W/o heating	
		Measuring range	0-360°
		Accuracy	1° (0.5°)
.x0.000		Electr. output	8 bit serial-synchron
		Resolution	2.5°
.x0.001		Electr. output	10 bit serial-synchron
		Resolution	0.35°
		Operating voltage	
		Electronics	3.3-42 V DC
		Current consumption	1.4 mA. standby
		Heating	24 V AC/DC; 25 W
		Ambient temp.	-50 ... +80 °C
		Starting value	‹ 0.5 m/s at 10°
		Distance constant	‹ 1 m (acc. to ASTM D 5366-96)
		Damping ratio	D › 0.25
		Electr. connection	8-pole plug connection
		Mounting	Onto mast tube R 1"
		Fixing boring	Ø 35 x 25 mm
		Dimensions	390 x 240 mm
		Protection	IP 55
		Weight	0.7 kg
		Material	Alu, anodised

Wind
First Class

Wind Direction Transmitter "First Class"

- Digital output RS 485

The wind transmitter is designed for the acquisition of the horizontal component of the wind direction in the field of meteorology and environmental measuring technology, evaluation of location, and measurement of capacity characteristics of wind power systems. Special characters are a defined and optimised, dynamic behaviour as well as:

- High measurement accuracy and resolution
- High damping with small distance constant
- Low starting value
- Low power consumption
- Simple mounting

The measuring value is available at the output as **digital signal.** The output signal can be transmitted to display instruments, recording instruments, data loggers as well as to process control systems.

For winter operation the instrument (4.3150.00.xxx) is equipped with an electronically regulated heating.

Order No.	
4.3150.00.400	With heating
.10.400	W/o heating
	Measuring range 0-360°
	Accuracy 1°
	Resolution 0.01° @ 12 bit
	serial data flow
	Electr. output
	Interface RS 485
	Baud rate 1200-57600 baud
	Output telegram xxx.xx for ex. 075.36°
	Operating voltage
	Electronic 3.3-42 V DC
	Current consumption approx. 6 mA
	Heating 24 V AC/DC; 25 W
	Ambient temperature -50 ... +80 °C
	Starting value ‹ 0.5 m/s at 10°
	Distance constant ‹ 1 m (acc. to ASTM D 5366-96)
	Damping ratio D ≥ 0.25
	Electr. connection 8-pole plug connection
	Mounting onto a mast tube R 1"
	Fixing boring Ø 35 x 25 mm
	Dimensions 390 x 240 mm
	Protection IP 55
	Weight 0.7 kg
	Material Alu, anodised

Wind Direction Transmitter "First Class"

- Analogue output

The wind transmitter is designed for the acquisition of the horizontal component of the wind direction in the field of meteorology and environmental measuring technology, evaluation of location, and measurement of capacity characteristics of wind power systems. Special characters are a defined and optimised, dynamic behaviour as well as:

- High measurement accuracy and resolution
- High damping with small distance constant
- Low starting value
- Low power consumption
- Simple mounting

The measuring value is available at the output as **analogue signal.** The output signal can be transmitted to display instruments, recording instruments, data loggers as well as to process control systems.
For winter operation the instrument (4.3150.00.xxx) is equipped with an electronically regulated heating.

Order No.	
4.3150.00.xxx	With heating
.10.xxx	W/o heating
	Measuring range 0-360°
	Accuracy 1°
	Resolution 0.35°
.x0.140	Electr. output 0-20 mA
	Operating voltage
	Electronics 15-24 V DC
	Current consumption approx. 4.5 mA + Iout
.x0.141	Electr. output 4-20 mA
	Operating voltage
	Electronics 15-24 V DC
	Current consumption approx. 4.5 mA + Iout
.x0.161	Electr. output 0-10 V
	Operating voltage
	Electronics 15-24 V DC
	Current consumption approx. 4.5 mA
	Heating 24 V AC/DC; 25 W
	Ambient temperature -50 ... +80 °C
	Starting value ‹ 0.5 m/s at 10°
	Distance constant ‹ 1 m (acc. to ASTM D 5366-96)
	Damping degree D › 0.25
	Electr. connection 8-pole plug connection
	Mounting onto a mast tube R 1"
	Fixing boring Ø 35 x 25 mm
	Dimensions 390 x 240 mm
	Protection IP 55
	Weight 0.7 kg
	Material Alu, anodised

Model Brief Description	Order No.
Wind Direction Transmitter "First Class" • Potentiometer output with protective circuit	**4.3150.00.x1x** **.10.x1x**
The wind transmitter is designed for the acquisition of the horizontal component of the wind direction in the field of meteorology and environmental measuring technology, evaluation of location, and measurement of capacity characteristics of wind power systems. Special characters are a defined and optimised, dynamic behaviour as well as: • High measurement accuracy and resolution • High damping with small distance constant • Low starting value • Hysteresis-free and non-wearing magnetic coupling between vane- and potentiometer-axis • Electronic protective circuit for current limiting and against erroneous connection • Simple mounting	**.x0.110** **.x0.012**
The measuring value is available at the output as **analogue signal**. The output signal can be transmitted to display instruments, recording instruments, data loggers as well as to process control systems. The electronic protective circuit prevents the potentiometer from overloading in case of erroneous connection and on transition from 0° to 360°. The protective circuit represents a multiplier of 50 Ω, however limits the short cut current on transition from 0° to 360° (and vice-versa) to ≤ 1 mA at 10 k Ω Potentiometer and ≤ 2 mA with a 2 k Ω potentiometer. For winter operation the instrument (4.3150.00.xxx) is equipped with an electronically regulated heating.	

Technical Data	
With heating W/o heating	
Measuring range	0-360°
Accuracy	‹ 1.5°
Electr. output	Potentiometer 10 KΩ
Multiplier	50 Ω
Operating voltage Potent./electronics	4-42 V DC
Current consumption	≤ Us / 10 kΩ
Electr. output	Potentiometer 2 KΩ
Operating voltage Potent./electronics	4-42 V DC
Current consumption	≤ Us / 2 kΩ
Heating	24 V AC/DC; 25 W
Ambient temp.	-50 ... +80 °C
Starting value	‹ 0.5 m/s at 10°
Distance constant	‹ 1 m (acc. to ASTM D 5366-96)
Damping ratio	D › 0.25
Electr. connection	8-pole plug connection
Mounting	onto a mast tube R 1"
Fixing boring	Ø 35 x 25 mm
Dimensions	390 x 240 mm
Protection	IP 55
Weight	0.7 kg
Material	Alu, anodised

Wind
First Class

Model Brief Description	Order No.
Wind Direction Transmitter "First Class" • Potentiometer output	**4.3150.00.212** **.10.212**

The wind transmitter is designed for the acquisition of the horizontal component of the wind direction in the field of meteorology and environmental measuring technology, evaluation of location, and measurement of capacity characteristics of wind power systems.
Special characters are a defined and optimised, dynamic behaviour as well as:

- High measurement accuracy and resolution
- High damping with small distance constant
- Low starting value
- Hysteresis-free and non-wearing magnetic coupling between vane- and potentiometer-axis
- Electronic protective circuit for current limiting and against erroneous connection
- Simple mounting

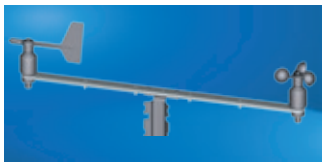
The measuring value is available at the output as analogue signal. The output signal can be transmitted to display instruments, recording instruments, data loggers as well as to process control systems.
For winter operation the instrument (4.3150.00.xxx) is equipped with an electronically regulated heating.

Technical Data	
With heating	
W/o heating	
Measuring range	0-360°
Accuracy	‹ 1.5°
Electr. output	Potentiometer 2 KΩ
Operating voltage	
Potent./electronics	0-30 V DC
Current consumption	≤ Us / 2 kΩ
Heating	24 V AC/DC; 25 W
Ambient temp.	-50 ... +80 °C
Starting value	‹ 0.5 m/s at 10°
Distance constant	‹ 1 m (acc. to ASTM D 5366-96)
Damping ratio	D › 0.25
Electr. connection	8-pole plug connection
Mounting	onto a mast tube R 1"
Fixing boring	Ø 35 x 25 mm
Dimensions	390 x 240 mm
Protection	IP 55
Weight	0.7 kg
Material	Alu, anodised

For other accessories such as masts, lightning rods, power supply etc. please refer to page 47 - 54

Wind
Masts and mechanical Accessories

	Model Brief Description	Order No.	Technical Data	
	Traverses			
	**Traverse** for Classic Wind Transmitters For mounting the wind speed transmitter and wind direction transmitter jointly onto a mast. The traverse is connected with plug according to the transmitter combinations.	**4.3170.00.xxx** **....000** **....001** **....003**	Wind Transmitt. 4.3303.22.000 4.3303.22.000 4.3105.22.000 Material Tube dimensions Fixing boring Horizontal Sensor distance Vertical Sensor distance Total height Weight	Wind Direc. Transm. 4.3120.22.018 4.3121.32.000 4.3120.22.018 Steel, galvanised 1 1/2" acc. to DIN 2448 (Ø 48.3 x 2.6 mm) Ø 50 x 74 mm 0.6 m 0.2 m 0.71 m 6.8 kg
	**Traverse** for Classic Wind Transmitters For mounting the wind speed transmitter and wind direction transmitter jointly onto a mast.	**4.3173.01.000** **4.3173.01.001**	Fixing boring Fixing boring Tube dimensions Material Horizontal Sensor distance Vertical Sensor distance Total height Weight	Ø 50 x 74 mm Ø 71 x 74 mm 1 1/2" n. DIN 2448 (Ø 48.3 x 2.6 mm) Aluminium, anodised (AlMgSi0,5) 0.6 m 0.2 m 0.8 m 3 kg
	**Traverse** for Wind Transmitters ”First Class“ For mounting the wind speed transmitter and wind direction transmitter jointly onto a mast.	**4.3174.00.000**	Material Tube dimensions Fixing boring Horizontal Sensor distance Vertical Sensor distance Total height Weight	Aluminium, anodised (AlMgSi0,5) Ø 34 x 4 mm Ø 50 mm 0.6 m 0.2 m 0.76 m 3 kg
	**Traverse** for Classic Wind Transmitters For mounting the wind speed transmitter and wind direction transmitter jointly onto a mast.	**4.3172.00.000**	Sensor distance Vertic. Sensor distance Total height Mast clamp Material Weight	0.6 m approx. 400 mm 650 mm Ø 40-Ø 80 mm Aluminium (AlMg3) 2.8 kg
	**Traverse** For Small Wind Transmitters For mounting the wind transmitter and wind direction transmitter jointly onto a mast.	**4.3171.20.000**	Clamping range Sensor distance Material Traverse Gripping clamp Weight	Ø 30-Ø 50 mm 0.5 m Aluminium, anodised (AlMgSi0,5) stainless steel 0.35 kg

Model Brief Description	Order No.	Technical Data		
Traverse for Wind Transmitters Compact For mounting the wind speed transmitter and wind direction transmitter jointly onto a mast.	**4.3171.30.000** **.31.**	Clamping range Sensor distance Material Traverse Mounting set Weight	Ø 48-Ø 102 mm Ø 116-Ø 200 mm 0.8 m Aluminium (AlMgSi0,5) stainless steel (V2A) 0.30 kg	
Traverse, short For Wind Transmitters Compact For mounting the wind speed transmitter and wind direction transmitter jointly onto a mast.	**4.3171.40.000** **.41.**	Clamping range Sensor distance Material Traverse Mounting set Weight	Ø 48-Ø 102 mm Ø 116-Ø 200 mm 0.4 m vom Mast Aluminium (AlMgSi0,5) Stainless steel (V2A) 0.30 kg	

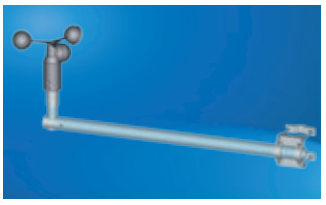
Lightning Rod / Hangers / Holders / Adaptors

Lightning Rod

To be mounted additionally at the telescopic mast, tube or traverse. Protects the wind transmitter against damages caused by lightning strokes.

Suitable for:

		Length	Height	Material	Weight
Traverse: 4.3174.00.000	**4.3100.98.000**	500 mm	1050 mm	Aluminium	1.5kg
Mast or tube with Ø 48-50 mm	**4.3100.99.000**	560 mm	800 mm	Steel, galvanised	2.4kg
Mast or tube with Ø 48-50 mm	**4.3100.99.150**	560 mm	1500 mm	Steel, galvanised	4 kg
Mast or tube with Ø 71 mm	**4.3100.99.170**	560 mm	1500 mm	Steel, galvanised	4 kg
Traverse: 4.3173.01.001	**4.3100.99.001**	400 mm	1500 mm	Aluminium	2 kg
Traverse: 4.3171.30/31/40/41...	**506351**	----	560 mm	Stainless steel	0.34 kg

Hanger 1 m The hanger is used for the lateral mounting of a wind transmitter, Classic type or Ultrasonic-Anemometer, onto a mast.	**4.3185.xx.003** **...00....** **...01....** **...02....**	Clamp range For mast diameter Length Tube diameter Material Weight	 60-132 mm 40-80 mm 48-50 mm 1 m 34 mm Aluminium (AlMgSi0,5) approx. 1.5 kg	
Hanger-First Class-1 m The hanger is used for the lateral mounting of a wind transmitter, First Class type, onto a mast.	**4.3184.01.000**	Clamp range For mast diameter Length Tube diameter Material Weight	 40-80 mm 1 m 34 mm Aluminium (AlMgSi0,5) approx. 1.5 kg	
Holder compact The holder serves for the mounting of a wind transmitter, Compact-type, onto an instrument carrier or mast.	**506347**	Clamp range Dimensions Tube diameter Material Weight	Ø 35-50 mm 80 x 150 mm 34 mm stainless steel (V2A) 0.35 kg	

Wind
Masts and mechanical Accessories

	Model Brief Description	Order No.	Technical Data	
	**Adaptor** Serves for reducing the diameter of the mast end tube from 71 mm to 50 mm so that Classic wind transmitters or US-anemometers can be mounted directly onto the mast top.	**211545**	Material Weight	Aluminium 1 kg
	**Adaptor** Serves for reducing the mast diameter to 50 mm diameter for mounting wind transmitters of the classic types or ultrasonic anemometers onto a mast top. The POM (plastic)-model insulates the measuring instrument with the mast.	**507936** **508077** **507555**	Mast diameter Diameter Material Weight	71 mm 60 mm 50 mm 145 mm high Ø 110 / 95 / 70 mm POM 0.9 / 0.7 / 0.4 kg
	**Adaptor 1"** Serves for reducing a traverse tube diameter from 50 to 34 mm in order to mount a wind transmitter of the first class types.	**507620**	Material Weight	Aluminium (AlMgSi1) 0.8 kg
	**Adaptor 1"** The adaptor is used to mount wind measuring instruments of the compact-series onto a 1"- tube.	**506283**	Material Weight	Aluminium (AlMgSi1) 0.5 kg
	**Mounting Set compact** Mounting holder with straps for mounting of power supply units, connection boxes compact, and wind interfaces onto masts or tubes.	**506614** **506971**	Clamp range Material Weight	Ø 48-102 mm Ø 116-200 mm Stainless steel (V2A) 0.18 kg

Please contact us for other accessories, such as cables and cable connections as well as for additional constructions of masts or systems.